

Standard Operating Procedure (SOP) Remech

1 General information

1.1 Actuality

The Client reserves the right to update this standard operating procedure at irregular intervals and without special notification. The Contractor ensures that the most recent version of this standard operating procedure is available for the relevant order and he acknowledges this SOP.

The most recent version of this SOP is available for our partners on our homepage <http://www.remech.de> under Download.

Changes to the previous version of this SOP are highlighted in yellow.

If you have any ideas, suggestions or wishes for improving this procedure, or questions concerning it, please do not hesitate to contact us.

1.2 Audits and supplier inspections

Audits

Audits based on ISO 9001 or VDS 6.4 are conducted when projects exceed a certain size. These audits will be coordinated with you in good time, and you will receive an audit program.

Progress checks

The Contractor grants the Client the right to check the progress of the project at any time, even at the Contractor's premises. If necessary these audits can also be conducted unannounced.

2 Production of parts/modules

2.1 Labeling

All individual production parts and modules must be labeled by the Contractor, preferably at the position marked with "XXX" in the drawing.

Production parts

Scope of labeling:

Each part shall be labeled with drawing number and part number.

Refer to 7. Labeling by the manufacturer

Labeling

The labeling shall be attached directly on the production part. If the labeling cannot or should not be attached directly on the production part because of the condition of the part (part is too small, individual labeling is unnecessary for mass-production parts), such parts shall be delivered in suitable containers (plastic bags, cardboard boxes, euro pallets). The containers are then labeled with a sticker or a tag. These must be attached in a non-detachable manner to ensure that they are still attached when they arrive at the location where the parts will be used.

Parts which lose their labeling due to reworking or other causes must be re-labeled.

Red pens or red paint must not be used for labeling purposes.

Permitted labeling methods

Plastics engraving; laser inscription

Steel/aluminum steel-stamp number; press stamp; acid stamp; electric engraver; engraving; laser inscription

Note: On processed parts and fits, the labeling must be with either acid stamp or laser. On painted surfaces the labeling must be engraved or applied as steel-stamp number.

2.2 Color scheme

Unless otherwise specified in the order/drawing, the following shall apply:

- The color scheme specifications apply to individual parts, modules and complete machines.
- Pretreatment
 - Steel
 - mechanical: manual pretreatment using appropriate procedures, metallically clean
 - preparation level St2 in accordance with DIN EN ISO 12944-4, Appendix A plus additional notice
 - All remaining residues have to adhere.
 - Aluminum
 - Mechanically: metallically clean, free from residues >> no surface coating

- Plastic
 - Mechanically clean, free from residues >> no surface coating
- The color (paint coats) shall be applied in the following order:
 - priming coat
 - intermediate coat
 - final coat with uniform and homogeneous surface in RAL according to the color concept
- Powder coatings must be discussed with the Client for the specific project.
- Mounting and screw-on surfaces shall be primed with RAL 7001 (silver gray) silk gloss (thinned form 1:10 mixing ratio with ethyl alcohol, "free of paint runs").
- The surface must be glossy and without varnish runs.
- The coating must be executed in accordance with the standards of DIN EN ISO 12944 "Corrosion protection of steel constructions through coating systems".
- The minimum thickness of coating must be executed in accordance with the standards of DIN EN ISO 12944 – 2 corrosiveness category C2 and DIN EN ISO 12944-1 term of protection.
- Maximum thickness of coating (primer + painting): $t \leq 0.2$ mm.
- The respective storage-, running- and guiding surfaces have to be taped.
- Threaded bores and precision bores as well as reflected surfaces for bolt heads must always be free of paint.
- Adhesive tape shall be removed after the painting work and before delivery.
- The instructions of the paint manufacturer must be followed when working with coating systems.
- The color concept is designed project-specific.
- The Contractor shall report if he receives an order in which no/a non-RAL color is applied.
- Bolted connections must be made using washers and Schnorr tooth lock washers on dried paint.

2.3 Changes to the production documents

Production documents are drawings, parts lists and, if necessary, other data provided.

Permission to deviate

The Supplier must deliver in compliance with the drawings and specifications. If the Supplier is temporarily unable to deliver because of minor deviations, he has the option of submitting a written application for permission to deviate to the Client. Deviations can then be approved only if the safety, proper functioning and service life of the parts is not impaired.

The scope of the application shall be examined by the Client. A written statement regarding the application shall be made within a reasonable period.

Permissions to deviate must always be in writing in order to be effective and shall be limited to a specific number of parts or a specific delivery period.

The application of permission to deviate must include the following items:

- Part name, part number, modification status
- Type and scope of the deviation (with sketch)
- The exact specifications/analyses for deviations in material
- Test/trial results if any
- Number of pieces and/or delivery date which will be affected by the deviation

A release by the Client does not release the Supplier from his responsibility.

Modifications or amendments to drawings by the Contractor

Required modifications during the production process can have the following causes:

- A faulty or unclear drawing
- Faults during the production process, whereby the part can still be used

For modifications that were made by the Contractor together with the Client (purchasing or construction), the following information must be noted on the drawing in writing or indelibly on the document.

- Deviation from the drawing or a possible modification to the drawing
- Name of the person with whom the modification was agreed to at the Client
- Name of the Contractor and/or his authorized representative
- Date and signature

3 Assembly of modules

- Schnorr tooth lock washers are to be used for securing bolted connections.
- Schnorr tooth lock washers that lie directly on coated surfaces shall be additionally secured with flat washers.
- All bolts, nuts and washers must be zinc coated.
- All bolts shall be checked for secure fit and provided with red paint securing point that extends at least over the connection between bolt head and washer.

4 Packaging and conservation

4.1 Planning the packaging

The packaging shall be planned in such a way that no damage can occur during transport and storage. In addition to taking into account aspects such as the most cost-effective handling (filling capacity, low-cost emptying, transport and stacking capability), the planning must also consider environmental aspects.

4.2 Hazardous substances

Prior to the first delivery of hazardous substances, the Client's purchasing department must be sent the appropriate safety data sheets without having to request these.

All parts must be free of silicone and materials that damage the paintwork or cause craters.

4.3 Packaging and transportation

The packaging is used to protect products during shipping and storage.

To avoid damaging the products, conservation agents and, if necessary, additional packaging options are to be used. This applies to mechanical, chemical and physical loads.

Company-internal and legal regulations, as well as customer-specific guidelines require adherence with the following principles for packaging and shipping activities:

- The size and the expense of the packaging must be restricted to protecting the product.
- Filling material must be reduced to a minimum.
- Where possible, reusable or recyclable packaging materials are to be used.
- Oil paper and wax paper may be used only with the Client's consent.
- Use only preservative agents that comply with IPPC and EC directives.

Contractor is responsible for using selected packaging.

Information on how to handle the packaging must, if necessary, be attached visibly to the outside (e.g. protection from moisture, lifting points for transport by crane or forklift, various customer-specific and legal labeling).

5 Delivery

Care must be taken to ensure that the quality of the product is not impaired by handling.

To avoid any damage to the product, all selected means of transportation, such as pallets, containers or ground conveyors must be suitable for the purpose and in proper condition.

It must be possible to handle the means of transportation using standard transportation equipment (forklift or similar). If special transportation equipment is required (such as a special-purpose crane), this must be agreed in advance.

All production parts and modules shall be delivered with delivery documents (delivery note, production drawings, logs, etc.) showing the respective order number of the Client.

Delivery must be made during times specified for receiving goods:

Mo-Fr (except holidays) 7 am to 3:45 pm

Deliveries outside these hours must be arranged; otherwise delivery can be refused or not take place.

5.1 As-delivered state of modules and production parts

The products/parts/modules to be delivered must be subjected to a 100% outgoing goods inspection (if necessary with functional test). The test results must be recorded and documented.

The deliveries shall be organized in such a way that the Customer only needs to check for transport damage. Supplier must ensure correct number of pieces and correct material/parts. If additional incoming goods tests are required, the Customer is entitled to bill the Supplier for the expenses incurred.

If required, the Client can request that a test report be submitted together with the order.

All modules are to be delivered in inspected state.

Threads and fits are to be checked for proper functioning and reworked if needed.

All residues from other processing materials are to be eliminated.

5.2 Tests / test certificates

If inspection characteristics are specified on the drawing, a test report is to be supplied as well. Ordered test certificates must be supplied with the ordered parts/modules. The tests of the outgoing goods inspections at the Contractor must be archived there. If necessary, the Client can request these for examination.

The results of the test dimension checks are to be recorded in writing in the test report during inspection of the part:

- Designation of the inspected part or system
- Designation of the current test specifications, such as production drawings or test standards
- Name of the tester

- Place/date of test
- Designation of the test equipment
- Designation of the respective test dimension
- Reference values for high and low deviations (tolerances)
- Measured actual values (min and max value)

The standard test reports of the manufacturer can be used for this (for example, production inspections, 3D measuring machines, etc.).

6 Health and safety at work and environmental protection

The Supplier is obligated to comply with the relevant national legislation and regulations concerning health and safety at work and environmental protection.

A procedure shall be used that ensures compliance with all applicable legal safety and environmental regulations. These include the requirements of the Closed Substance Cycle and Waste Management Act (*Kreislaufwirtschaftsgesetz*). Verification is to be supplied by appropriate certificates or declarations of compliance.

7 Labeling by the manufacturer

7.1 Scope / specifications

- **Semi-finished products** → Labels, colored pencil, engraving, steel-stamp number
- **Semi-finished products** → Labels, colored pencil, engraving, steel-stamp number
- **Production parts** → (laser) engraving, electrochemical signature process

7.2 Special situations:

- **on fits** → electrochemical signature process, laser engraving
- **Turned parts** → labeled bags / tags / electrochemical signature process
- **Microparts** → Labeled bags
- **Shaped parts** → Engraving at specified position

Caution: Do not use the color red!

7.3 Specification of the position of the labeling on the individual part

If necessary, the design engineer specifies the position of the labeling on the part. Specifications are to be made on:

- Welded part
- Finished part, if size is adequate
- Shaped parts

7.4 Labeling information on the drawing

The labeling position on the individual part shall be specified on all individual part drawings:

XXX

the following stamp shall be positioned on LH side beside/above the labeling space

XXX Labeling with drawing number
 Labeling with drawing number

The following criteria apply to the labeling location:

- Labeling can also be read in assembled state (mandatory for wearing parts)
- Labeling primarily on unfinished surfaces
- Labeling shall be applied in an early production stage, for example, on the welded part (welded part drawing) and not after the part has been processed.

7.5 Title block Remech drawing

Projekt: Prüftechnik / testing technology					
Methode 1 ISO 128 	Maße, Form u. Lage ohne Toleranzangabe DIMENSIONS, FORM WITHOUT TOLERANCES ISO 2768 -mk	Oberfl. Rauheit SURFACE DIN ISO 1302	Maßstab: SCALE: 1:2	m ca.* kg	
			Oberfläche:		
	Datum DATE	Name NAME	Kurzz. SIGN	 Benennung /TITLE Abdeckung klein	A1
gezeich. DRAWN	17.11.11	Herold	*		
bearb. COORD.	17.11.11	Poßner	*		
geprüft CHECKED	17.11.11	Halupka	*		
Werkst.-Nr./Halbzeug: part-no. fixture: 1.0038 Bl. 10x326x786,5				Zeichnungs-Nummer/DRAWING NUMBER 12-1065-4300-002-0r0z	

12-1065-4300-002

7.6 Title block Daimler drawing

F56800001162306113000 – 110

2011	Datum/date	Name/name	Benennung / title Strebe		
Bearb./auth.	13.09.11	Rothe	Sach-Nummer / basic number F56800001162306113000		Pos. Nr. /part-number 110
Pruef./check	13.09.11	Poßner			
Norm/stand.			Maßstab/scale 1:1	System/system CATIA V5R19	Baumuster BR246
Freig./rel.	13.09.11	Halupka	Proj.Methode/ proj.method 1 ISO 5456-2		
Abteilung: TW5 / T51		© Daimler AG Schutzvermerk DIN 34 beachten! / Refer to protection notice DIN 34!		Lieferfirma Remech Systemtechnik GmbH	Hierzu DIN A4 Stückliste Blatt 1 von 1 Blatt
				A3	
Keine Änderung ohne Zustimmung der federführenden Konstruktion. / Any alterations are subject to the approval of the design department.					

7.7 Title block VW drawing

		FLACHEN ZU STIFTLOCHER ±0,05				
s / (/ v —)		TEIL 32	11-38D_986539	WIE GEZEICHNET		
KANTEN GEBROCHEN MESSKANTEN ENTGRATET		TEIL 32	11-38D_986540	SPIEGELBILD		
Nach VW 13705 Acc. to VW 13705		\sqrt{roh}	$\sqrt{Rz100}$	$\sqrt{Rz40}$	$\sqrt{Rz25}$	$\sqrt{Rz10}$
		\sqrt{s}	\sqrt{t}	\sqrt{u}	\sqrt{v}	\sqrt{w}
					\sqrt{x}	
tief	Zul.Abweichung fuer Nennmasze ohne Toleranzangabe nach DIN ISO 2768-m (spanende Fertigung). Permissible deviation for nominal sizes without tolerance specification acc.to DIN ISO 2768-m (machining operation).					
	≥ 0.5	> 6	> 30	> 120	> 400	> 1000
	≤ 6	≤ 30	≤ 120	≤ 400	≤ 1000	≤ 2000
	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2
						± 2
Bemerkung/ Note						
Positionsnr. / Item no.			Betriebsmittelnummer/ Operating equipment no.			
32-1z			11-38D_986539 11-38D_986540			
Härten Hardening 60±2 HRC		Einsatzhärtetiefe Case depth 0,8 mm		Vergueten Quenching and tempering 800N/mm²		
ZSB-B1. ASSY sheet		Maßstab Scale 1:1		Werkstoff Material Murtfeldt		
öhl						

- 11-38-D-986539-32
- 11-38-D-986540-32

7.8 Title block BMW drawing

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➤ ZSB no. ... 0134

BG no. is partly not recognizable on the individual part drawings, the associated BG number should therefore be declared as well. Parts numbers are shown in the drawings.

8 Information on changes:

Version / date:	Author	Description
V 1.0/ September 2, 2013	H. Ziermann; E. Franke	Document created
V 1.01/ May 9, 2014	E Franke	Addition to assembly of modules. Appendix revised
V 1.02/ September 18, 2014	E Franke	Addition to item 5.1
V 1.03/ October 30, 2014	E Franke	Item 1; Item 5.2 inspection dimension/report; item 2.2 "with ethyl alcohol" added
V 1.04/ December 5, 2014	E Franke	"Surfaces (150x150)mm or greater with anti-corrosion oil" removed
V 1.05/ May 5, 2015	E Franke	Additions to items 2.3 and 3
V 1.06/ December 1, 2014	H. Ziermann	Additions to items 2.2
V 1.07 July 2018		Additions to items 5.2

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